WHAT IS CLAIMED IS:

1. A process for synthesizing a hydrogenated resin having characteristics that make it particularly useful as a tackifier resin having low odor and low color characteristics, said process comprising the steps of (1) polymerization of an unsaturated hydrocarbon monomer mixture in the presence of aluminum halide and an allylic halide to produce an unsaturated resin, wherein the unsaturated hydrocarbon monomer mixture is comprised of unsaturated hyrdocarbon monomers containing from about 4 to about 18 carbon atoms, and wherein said process is conducted in the absence of tantalum compounds; and (2) hydrogenating the unsaturated resin in the presence of a palladium on alumina catalyst system at a temperature which is within the range of about 120°C to about 240°C to produce the hydrogenated resin.

2. A process as specified in claim 1 wherein the hydrogenation step is conducted at a pressure that is within the range of about 200 psig to about 2000 psig.

3. A process as specified in claim 2 wherein said unsaturated hydrocarbon monomer mixture is comprised of 2-methyl-2-butene.

4. A process as specified in claim 2 wherein said unsaturated hydrocarbon monomer mixture is comprised of cis-piperylene.

5. A process as specified in claim 2 wherein said unsaturated hydrocarbon monomer mixture is comprised of 2-methyl-2-butene, cis-piperylene, and cyclopentene.

6. A process as specified in claim 2 wherein the aluminum halide is aluminum chloride.

7. A process as specified in claim 2 wherein the allylic halide is allyl chloride.

8. A process as specified in claim 6 wherein the aluminum chloride is present at a level within the range of 0.05 phm to about 10 phm.

9. A process as specified in claim 8 wherein the allylic halide is allyl chloride and wherein the weight ratio of the aluminum chloride to the allyl chloride is within the range of about 1:4 to about 50:1.

10. A process as specified in claim 9 wherein the aluminum chloride is in the form of anhydrous particles having a particle size that is within the range of about 5 to about 200 mesh.

11. A process as specified in claim 10 wherein the polymerization step is conducted at a temperature that is within the range of about 0°C to about 50°C and under autogenous pressure; and wherein the hydrogenation step is conducted at a temperature which is within the range of about 130°C to about 200°C and a pressure which is within the range of about 300 psig to about 1000 psig.

12. A process as specified in claim 8 wherein the aluminum chloride is present at a level within the range of 0. 5 phm to about 5 phm and wherein the weight ratio of the aluminum chloride to the allyl chloride is within the range of about 1:1 to about 6:1.

13. A process as specified in claim 12 wherein said unsaturated hydrocarbon monomer mixture is comprised of 2-methyl-2-butene, cis-piperylene, and cyclopentene.

14. A process as specified in claim 13 wherein the aluminum chloride is present at a level within the range of 1 phm to about 3 phm and wherein the weight ratio of the aluminum chloride to the allyl chloride is within the range of about 2:1 to about 8:1.

15. A process as specified in claim 14 wherein the hydrogenation step is conducted at a temperature that is within the range of about 10°C to about 45°C; and wherein the hydrogenation step is conducted at a temperature which is within the range of about 140°C to about 180°C.

16. A process for synthesizing a resin having characteristics that make it particularly useful as a tackifier resin, said process comprising the polymerization of an unsaturated hydrocarbon monomer mixture in the presence of aluminum halide and an allylic halide, wherein the unsaturated hydrocarbon monomer mixture is comprised of 2-methyl-2-butene, cis-piperylene, trans-piperylene, cyclopentene, and additional unsaturated hyrdocarbon monomers containing from about 4 to about 18 carbon atoms, wherein said process is conducted in the absence of tantalum compounds.

17. A process as specified in claim 16 wherein the additional unsaturated hydrocarbon monomers contain from about 5 to about 8 carbon atoms.

18. A process as specified in claim 17 wherein the aluminum halide is aluminum chloride.

19. A process as specified in claim 17 wherein said process is conducted at a temperature that is within the range of about 0°C to about 50°C, wherein the aluminum chloride is present at a level within the range of 0. 5 phm to about 5 phm, and wherein the weight ratio of the aluminum chloride to the allyl chloride is within the range of about 1:1 to about 20:1.

20. A process as specified in claim 15 wherein the hydrogenation step is conducted at a pressure which is within the range of about 400 psig to about 800 psig.